IDAHO BUREAU OF LABORATORIES

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"Protecting the health and environment of the people of Idaho through testing and research"

Prior newsletters, as well as information regarding packing and shipping of infectious substances, diagnostic specimens and biological agents and sampling submission guide are posted on the Idaho Bureau of Laboratories Web site: http://www2.state.id. us/dhw/health/labs/index_ labs.htm. For training information, including teleconferences, contact Carole Morgan at (208) 334-2235 ext. 250 or by e-mail at morganc@idhw.state.id.us

Mark your calendar:
ISCLS
April 15-17
Twin Falls

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IDAHO BUREAU OF LABORATORIES

IDAHO DEPARTMENT OF HEALTH & WELFARE

LABORATORY CONNECTIONS

WINTER 2004

PERSPECTIVE

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As summer 2003 came to a close, it appeared Idaho would remain free of detectable West Nile Virus for one more year. With increasing numbers of positive mosquitoes in Colorado, Wyoming and Utah and with horses and people contracting the disease, it seemed impossible we would get through another year without a case.

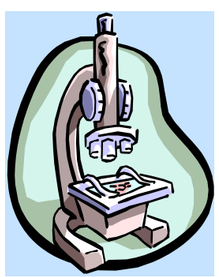
We were expecting dozens of cases. Hospitals, physicians, and laboratories began the summer convinced there would be at least one big spike in workload resulting from a report of West Nile Virus in the state. We at the Idaho Bureau of Laboratories, IBL, spent much of the spring getting ready for the onslaught of samples, most from you and your physicians. Through the summer nearly fifteen hundred mosquito pools, 77 birds and over 100 clinical samples were tested. West Nile Virus was only detected in two people who had been in Colorado

West Nile Virus did finally enter Idaho in containers of baby alligators. The first human case was contracted by an individual who was performing a necropsy on a young alligator who had the disease. Who could have predicted such circumstances? But there is a lesson here we should take seriously.

In this era of bioterrorism, we should prepare for the unexpected — the radically unexpected. Common infections occurring out of season; increased antibiotic resistant or an uncommon pattern of resistance; the identification of an organism new to our geographic area or one not previously associated with an infectious disease are just a few of the scenarios which should increase our level of awareness.

Influenza A (H5N1) Cases

Of the 14 people admitted to Hanoi hospitals since October, with severe respiratory illness, three have had avian Influenza A (H5N1). Twelve of these patients have died. This influenza A (H5N1) normally circulates among wild birds and can infect poultry. WHO reports all gene sequenced so far are of avian origin. The acquisition of human genes increases the likelihood that a virus of avian origin can readily be transmitted from one human to another.



SARS Headlines:

Cases of SARS Confirmed in China; U.S. Bans Import of Civet Cats

The Virology/Serology Section of the Idaho Bureau of Laboratories, IBL, is prepared to test serum/blood, stool, and respiratory specimens by PCR and acute/convalescent serum for antibody testing by EIA. Requests for SARS testing will *not* be accepted without a case evaluation by a local health district epidemiologist. Testing for SARS when prevalence is low has a high probability of generating false positives. For more information, see CDC Web site at www.cdc.gov/ncidoc/sars/ and join us for a teleconference February 19 at 12:00 p.m. MST for an "Update on Influenza & SARS."

Everything Old is New Again: CLIA Final Regulations

On January 24, 2003, Centers for Disease Control and Prevention and Centers for Medicare & Medicaid Services published the final CLIA regulations to be effective on April 24, 2003. Here is a summary of the major changes:

- **New Format**: The regulations are organized now in Preanalytic, Analytic and Postanalytic sections. Three subparts (J,K and P) have been combined into subparts J (Facility Administration) and K (Quality Systems). These changes are designed to track a specimen through the laboratory testing process and enhance review and inspection.
- **New Terms: "**Quality Assessment" replaces "Quality Assurance." "Quality Systems" is now used to describe the process(es) that bring about quality testing. " Nonwaived Testing" replaces the use of the terms "Moderate- and High- Complexity Testing." High complexity testing will now pertain to the personnel requirements for this category.
- **Updated Requirements:** Of the many changes, the most significant ones are as follows:

* Test Method Verification now applies to all non-waived tests and must be performed at each site for new tests added after April 24,2003.
* Equivalent, or alternative QC, will allow a lab to determine the frequency of QC performance based on studies performed within the lab's environment.
* Frequency of quality control reduced in some areas.

Training on the specifics of these changes will be provided this coming year by the Laboratory Improvement Section of the IBL. CMS has said they will allow one educational inspection cycle after April 24, 2003. This will give labs two years to get technical assistance to meet the updated requirements. Only major (i.e. risk to patient safety) violations will be cited during this roll out period.

Is Influenza Over or Just Beginning?

By December 2003, Idaho was reporting "widespread" influenza activity for the state. We have had good participation from clinicians and laboratorieans in our viral surveillance program this year and were able to isolate and identify Influenza A (H3N2) as the circulating strain. Representative isolates were forwarded to the Centers for Disease Control where they were characterized as the minor drift variant A/Fujian.

The appearance of this variant demonstrates the importance of culturing viruses so that antigenic changes can be detected. Decisions about the composition of next year's vaccine will be influenced by the appearance and detection of this strain. Each season there is an effort to match vaccine strains with these continuously changing circulating strains.

The IBL has not detected any other influenza viruses, such as the Influenza A (H1N1) or Influenza B, which circulated widely last season. These strains have been detected in very small numbers in the U.S. this winter and could still make a strong showing. Influenza season may not be over yet.

How to Stay Out of Jail

Recently the IBL sent you a document entitled " Sentinel Laboratory Guidelines for Suspected Agents of Bioterrorism, Packing and Shipping Infectious Substances, Diagnostic Specimens, and Biological Agents." If you have not received this document, contact Carole Morgan. Additional information is also available in "Cumitech40: Packing and Shipping of Diagnostic Specimens and Infectious Substances" published by ASM. You can order this publication for $19.95 on line at www.asmpress.org or by phone at (800) 546-2416.

The certification of the person who is doing the actual packaging of the infectious substance, diagnostic specimens or biological agent is the responsibility of the organization or the employer. New regulations go into effect at the beginning of each calendar year. The entity or organization is responsible for being in compliance with all regulations and current changes. Failure to comply with regulations may result in criminal prosecution and substantial financial penalties for the employer or entity.

Six clinical cases of drug- resistant Salmonella Typhimurium, phage type DT104, in Ada County have been linked epidemiologically and molecularly to kittens adopted from the Idaho Humane Society. Two cases required hospitalization. Seven samples from cats share a common PFGE pattern with the clinical isolates. More samples are pending.

What's in a Name? Methicillin Resistant *Staphylococcus aureus* MRSA

Almost half of the nosocomial infections and an increasing number of community- acquired Staph aureus infections are resistant to oxacillin or nafcillin, the replacements for methicillin. Classes of MRSA are based mechanisms of resistance. Many factors are involved in the expression of methicillin resistance. The gene *mec* A encodes a penicillin-binding protein (PBP2A), which has a lower affinity for β-lactams than for methicillin. Identifying the class of MRSA is necessary to determine treatment options. Vanycomycin is often the only drug of choice for treating severe MRSA infections, whereas BORSA and MODSA will respond to other antimicrobial agents. If you have questions regarding this testing or would like to submit samples, please contact the Microbiology Section at 208-334-2235 ext 252.

Decoding MRSA

CLASS	Oxacillin Agar Screen*	Mechanism of Resistance	β-Lactam Inhibitor Reversal of "R"	Non-β-Lactam Antibiotic Resistance	MIC
Homogeneous (*mec*A gene present)	Growth	Supplemental penicillin-binding-protein (PBP2a)	No	Yes	Above 4µg/ml
Heterogeneous (*mec*A gene present)	Usually growth	Supplemental penicillin–binding protein (PBP2a)	No	Yes	2-8 µg/ml
BORSA , borderline MRSA (No *mec*A gene)	Usually no growth	Hyperproduction of β-Lactamase	Yes; lower MICs by ≥2 dilutions	No	2-8µg/ml
MOD-SA (No *mec*A gene)	Usually no growth	Modification of existing of penicillin-binding protein	No	No	2-8µg/ml

*Inoculated Mueller-Hinton agar plate containing 6µg/ml oxacillin with 2% NaCl and incubated at 35°C for 24 hours.

Above table adapted from "Microbiology Frontline" Vol. 3 No. 1.

Molecular detection of the *mec*A gene has become the gold standard for identification of MRSA. Oxoid and Denka Seiken offer latex agglutination kits for the detection of PBP2a.

According to Felten, et al, J. Clin. Microbiol.**40:**2766-2771. Cefoxitin and moxalactam disk diffusion tests detected 100% of all classes of MRSA. Cefoxitin inhibition zone diameters were < 27mm, and moxalactam inhibition zone diameters were < 24 mm.

Sentinel Laboratory protocols: Is your set complete?

It's been two years since the anthrax events brought bioterrorism onto our radar screens and created the urgency to have basic protocols in place for handling select agents. At that time, the CDC had already begun to validate and distribute Sentinel Lab protocols for some of the Category A list of agents. Now, in concert with the ASM, the list of published protocols has grown from the "top five" (*B. anthracis*, *Y. pestis*, *F. tularensis*, Botulinum Toxin, and Smallpox) to include some of the Category B agents. Unfortunately, not all the protocols are presented at either the CDC Web site www.bt.cdc.gov/agent/agentlist.asp or the ASM at www.asm.org/Policy/index.asp?bid=6342.

Both sites contain approved laboratory protocols. The ASM site is more inclusive and has newer protocols for *Burkholderia sp.*, *Coxiella burnetii* and "Unknown" Viruses which includes smallpox, hemorrhagic fever and encephalitis viruses. The CDC site also contains a wealth of information on shipping and handling, chain-of-custody, slide sets on agents and many other educational items. Because these protocols are updated periodically, you should check your protocol revision dates with those on either Web site. If you are interested in learning more, join us for a teleconference March 23, "Laboratory Update on Burkholderia and Coxiella," at 12:00 p.m. MST.

TB

The Idaho Bureau of Laboratories TB laboratory will remain functional during the construction of the BL3 laboratory and will be accepting TB samples